SETI PROGRAMS AT THE UNIVERSITY OF CALIFORNIA, BERKELEY

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I describe recent SETI efforts by the University of California, Berkeley SETI Research center and efforts to be undertaken in the near future. In addition to our well known SETI@home (Korpela 2011) and Astropulse (Von Korff et al. 2013) public participation SETI survey projects, we have performed several targeted obsevations of different object classes. These include 1) Observations between 1.1 and 1.9 GHz of planetary systems idenfied by Kepler as containing earthlike planets in or near the habitable zones. (Siemion et al. 2013) 2) Wide-band Arecibo observations of 112 sky locations where the Astropulse project has identified strong µs duration dispersed radio pulses. 3) Observations of Kepler identified planetary systems at times when two planets would appear to be in conjuction when viewed from Earth. We plan a future campaign to simultaneously observe known planetary systems at radio, optical and IR wavelengths.

We have also continued to advance our instrumentation. We are currently building the sixth generation of our SERENDIP (Siemion et al. 2011, Korpela et al. 2011) series of SETI instrumentation for installation at both Arecibo and GBT. SERENDIP VI will utilize an FPGA based polyphase filter bank course spectrometer feeding 8 or more GPU based compute nodes. The Arecibo version of this spectrometer will be capable of providing thresholded 1Hz resolution spectra of all seven beams of the 320 MHz bandwidth Arecibo L-band Feed Array in dual polarization. A separate front end will be available to allow up to 2.2 GHz of bandwidth in dual polarization from single pixel receivers. The Green Bank version of this spectrometer will utilize the single pixel front end. We are invesitating the possibility of simultaneous back end stages operating on the same or minimal processed data, for example, we could support simulataneous detection of fast extragalactic radio bursts (Thornton et al. 2013) by adding additional compute nodes. We are also developing new instruments that extend our past optical SETI efforts into the infrared.

And, of course, our SETI@home and Astropulse projects continue to progress with the addition of new algorithms, porting to new devices including smart phones, and the promise of new data sources.

References:

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